

REMARKS

The Examiner is thanked for the due consideration given the application.

Claims 1, 7 and 10-19 are pending in the application. Claim 17 has been withdrawn from consideration. By this amendment claims 2-6 have been canceled. Claim 1 has been amended to better set forth the invention and to re-define Mh as nickel. New claim 19 sets forth the nickel as Raney Nickel. Support for the amended claim set can be found in paragraphs 0019 and 0034 of the specification.

No new matter is believed to be added to the application by this amendment.

Rejection Under 35 USC §112, Second Paragraph

Claims 1-7, 10-16 and 18 have been rejected under 35 USC §112, second paragraph as being indefinite. This rejection is respectfully traversed.

The Office Action assert that the term "metal M₁" encompasses several non-metals. However, several non-metals have been removed from the claims. Moreover, this recitation has been re-defined as "element M₁".

Additionally, silicon, germanium, arsenic, selenium and tellurium are metalloids which thus have

properties of metal. In the case of the present invention, the metalloids have the same interesting properties of the metal and are thus encompassed in the definition of M_1 , even if it was considered as a metal.

The claims are thus clear, definite and have full antecedent basis.

This rejection is believed to be overcome, and withdrawal thereof is respectfully requested.

Rejection Over HIRATA et al.

Claims 1-7, 10-16 and 18 remain rejected under 35 USC §103(a) as being unpatentable over HIRATA et al. (USP 6,106,589). This rejection is respectfully traversed.

The present invention pertains to a method allowing the removal of contaminant elements, i.e., metals, in ionic form in solution in water or aqueous effluents in which nickel having a high surface area completely or partially coated with hydrogen is utilized. This method aims at the elimination of these contaminants in the aqueous effluents from industry and for the treatment of water for human consumption.

Instant claim 1 of the present invention now sets forth a process for removing contaminant ions by treating

the aqueous effluent with nickel having a high specific surface area.

On column 7, lines 7-10, when HIRATA describes the preparation of the ion treating agent, it is mentioned that *"nickel metal precipitated by reduction on the surface of the metal ion-treating agent and was laminated in a white color."* It is well known to the person skilled in the art that the formation of laminated nickel in a white color corresponds to the formation of a layer of nickel with a weak specific surface area. Indeed, when the specific surface area of nickel is high the nickel has a black color.

Turning back to the reasoning in the Office Action, HIRATA et al. disclose a method for reducing the content of metals in ionic form present in aqueous effluents. Note the metal is not a contaminating metal, it is a valuable metal to be recovered.

However, HIRATA et al. do not disclose such a method including the step of providing an aqueous effluent including at least a metal Mi in ionic form. The metal Mi is as defined in claim 1, and this definition does not include palladium, gold and nickel.

Also, HIRATA et al. do not disclose placing the aqueous effluent in contact with nickel that is completely or partially coated with hydrogen during the treatment of the metal ions, the ions M_i being **chemisorbed onto the nickel**.

This is because HIRATA et al. do not disclose treating an effluent containing element M_1 (metal) as defined in claim 1.

In addition, HIRATA et al. do not disclose the use of nickel having a high specific surface area. This has a dramatic consequence. In HIRATA et al., the palladium is first deposited through chemisorption onto the nickel until the whole surface of nickel is recovered with palladium.

HIRATA et al.'s process functions because then the palladium continues to be deposited, not on the nickel, but on the deposited palladium itself. In other words the palladium coating grows.

HIRATA et al.'s process and metal-ion-treating agent **cannot** be implemented in the process according to the present invention. As previously explained, only noble metal ions may have this behavior, say ability, to depose on itself. Indeed, as mentioned in response to the previous office action, the mechanism of metal growth is due to the

capacity of the noble metal to adsorb hydrogen which enables the deposition of additional noble metallic ions on the surface of the same noble metal.

On the contrary, the Mi metal ions according to the invention do not - they are only able to be chemisorbed on the nickel.

If one use HIRATA et al.'s process and metal-ion-treating agent in the process of the invention, the laminated nickel of HIRATA et al. would be very rapidly completely recovered by a Mi metal coating, and as the Mi metal can not depose on itself, the reaction would end and there would be no efficient contaminant elimination.

One could of course wonder if it would not have been obvious to improve HIRATA et al's process by using a high specific surface area for the metal-ion-treating agent. The response would however be **NO**, because:

1. HIRATA et al. do not need this simply because the palladium coating grows on itself, there is no need to change, and

2. HIRATA et al. prefer to keep the palladium growing and get a thick coating of palladium (palladium on itself) rather than having a high surface specific nickel with palladium chemisorbed on it. It should be remembered

that that HIRATA et al.'s goal is to recover high valuable noble metals, whereas the present invention wants to eliminate contaminants.

Therefore, the person skilled in the art would not have been motivated to modify HIRATA et al.'s process by replacing its metal-ion-treating agent by a high specific surface area nickel, and therefore, the invention as now defined in amended claim 1 is non-obvious. Claims depending upon claim 1 are non-obvious for at least these reasons.

Additional distinctions of the present invention over HIRATA et al. are of record in the application which, for brevity, are not repeated here.

One of ordinary skill and creativity would thus not produce a claimed embodiment of the present invention from a knowledge of HIRATA et al., and a *prima facie* case of unpatentability has thus not been made.

This rejection is believed to be overcome, and withdrawal thereof is respectfully requested.

Conclusion

It is believed that the rejection has been overcome, obviated or rendered moot, and no issues remain. The Examiner is accordingly respectfully requested to place the application in condition for allowance and to issue a Notice of Allowability.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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